OpenFOAM Numerical Simulations with Different Lid Driven Cavity Shapes

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Abstract: The finite volume method have been developed to solve the Navier-Stokes equations with primitive variables and non dimensional form. This work examine the classical benchmark problem of the lid-driven cavity at a different Reynolds range (Re = 10,100,400, 1000, 2000, 3200) and several cavity geometries. The cavity configurations include square cavity, skewed cavity, trapezoidal cavity and arcshaped cavity. The flow is assumed laminar and solved in a uniform mesh. A CFD tool with its solvers (icoFoam) will be used for this study.

Keywords: Cavity, OpenFOAM, icoFoam, Vorticity, Lid-driven cavities